

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A thermo-expansive microcapsule comprising consisting essentially of: a polymeric shell produced by polymerizing monomer components containing consisting essentially of 15 to 75 weight % of a nitrile monomer, 10 to 65 weight % of a monomer having a carboxyl group, 0.1 to 20 weight % of a monomer having an amide group and 0.1 to 20 weight % of a monomer having a cyclic structure in its side chain; and a blowing agent encapsulated in the polymeric shell,

wherein the monomer having an amide group is at least one selected from the group consisting of acryl amide, methacrylamide, N,N-dimethylacrylamide, and N,N-dimethylmethacrylamide.

2. (Currently Amended) The A thermo-expansive microcapsule of Claim 1, consisting essentially of: wherein the a polymeric shell is produced by polymerizing the monomer components further containing consisting essentially of 15 to 75 weight % of a nitrile monomer, 10 to 65 weight % of a monomer having a carboxyl group, 0.1 to 20 weight % of a monomer having an amide group, 0.1 to 20 weight % of a monomer having a cyclic structure in its side chain and 3 weight % or less of a monomer having at least two polymerizable double bonds (a cross linking agent); and a blowing agent encapsulated in the polymeric shell,

wherein the monomer having an amide group is at least one selected from the group consisting of acryl amide, methacrylamide, N,N-dimethylacrylamide, and N,N-dimethylmethacrylamide.

3. (Previously Presented) The thermo-expansive microcapsule of Claim 1, wherein the polymeric shell has a glass transition point (Tg) of 120 °C or higher.

4. (Previously Presented) The thermo-expansive microcapsule of Claim 1, wherein the polymeric shell contains 1 to 25 weight % of inorganic compounds.

5. (Previously Presented) The thermo-expansive microcapsule of Claim 1, which has a maximum expanding temperature of 200 °C or higher.

6. (Previously Presented) A production process of a foamed and molded product which comprises adding the thermo-expansive microcapsule of Claim 1 in rubber or resin to form a mixture and heating the mixture to expand the thermo-expansive microcapsule to introduce discrete air bubbles in the product.

7. (Previously Presented) A foamed and molded product containing the thermo-expansive microcapsule of Claim 1.

8. (Previously Presented) The thermo-expansive microcapsule according to claim 1, wherein the monomer having a cyclic structure in its side chain is at least one selected from the group consisting of styrene, α-methyl styrene, chlorostyrene, isobornyl(meth)acrylate, cyclohexyl methacrylate, phenyl maleimide, and cyclohexyl maleimide.

9. (Previously Presented) The thermo-expansive microcapsule according to claim 1, wherein the nitrile monomer is at least one selected from the group consisting of acrylonitrile and methacrylonitrile.

10. (Cancelled)

11. (New) The thermo-expansive microcapsule of Claim 2, wherein the polymeric shell has a glass transition point (Tg) of 120 °C or higher.

12. (New) The thermo-expansive microcapsule of Claim 2, wherein the polymeric shell contains 1 to 25 weight % of inorganic compounds.

13. (New) The thermo-expansive microcapsule of Claim 2, which has a maximum expanding temperature of 200 °C or higher.

14. (New) A production process of a foamed and molded product which comprises adding the thermo-expansive microcapsule of Claim 2 in rubber or resin to form a mixture and heating the mixture to expand the thermo-expansive microcapsule to introduce discrete air bubbles in the product.

15. (New) A foamed and molded product containing the thermo-expansive microcapsule of Claim 2.

16. (New) The thermo-expansive microcapsule according to Claim 2, wherein the monomer having a cyclic structure in its side chain is at least one selected from the group consisting of styrene, α-methyl styrene, chlorostyrene, isobornyl(meth)acrylate, cyclohexyl methacrylate, phenyl maleimide, and cyclohexyl maleimide.

17. (New) The thermo-expansive microcapsule according to Claim 2, wherein the nitrile monomer is at least one selected from the group consisting of acrylonitrile and methacrylonitrile.